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July 20, 1999

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Post-it [®] Fax Note 7671		Date: 7/17	# of pages: 4
To: Alice Lahan	From: Lauren Evans		
Co./Dept: CCoD	Co: Pinyon Env.		
Phone #	Phone #: 303 980 5200		
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Subject: Results of Soil Investigation, The Heller Property, 5350 Washington Street, Denver, Colorado

Dear Ms. Bosco:

This letter report presents the results of a Subsurface soil investigation performed by Pinyon Environmental Engineering Resources Inc. (Pinyon), on a vacant parcel of land, referred to as the "Heller" property, located at 5350 Washington Street, in Denver, Colorado (Figure 1). Pinyon's assessment was authorized by Nick C. Ioannides in a Notice to Proceed letter dated June 22, 1999. The City and County of Denver (CCoD) project number is 1999-902.

The purpose of this assessment was to evaluate the nature and possible source(s) of an oil and/or grease contaminant previously detected in the subsurface soils at the Site. The Site is an empty field to the north of the buildings at 5350 Washington Street. The Site is covered with ground vegetation. There is a mound of fill material located approximately 400 feet to the north and 600 feet to the east of the north entrance to 5350 Washington Street. There is a pond to the east of the empty field. The area around the Site is industrial.

Scope of Services

The scope of services included drilling one soil boring, at a location chosen by CCoD personnel, to a depth of 18 feet, collection of a soil sample, and analysis for oil and grease and fuel identification. Samples were collected continuously from 12 feet to 18 feet. Soil samples collected during drilling were field screened for volatile organic compounds (VOCs) using a photoionization detector (PID) and the headspace technique. In the headspace technique, a portion of the soil sample is placed in a "zip-lock" bag, which is sealed and placed in a warm area to promote volatilization. After a period of time, the PID is inserted into the headspace of the bag, and a reading is obtained. The sample with the highest PID reading is then submitted to the laboratory for analysis. Bill Dunn was contacted to examine the soil sample and recommend the best analytical method to identify any contaminants. Mr. Dunn recommended that an oil and grease analysis be used without a silica gel cleanup and using chloroform as the solvent.

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Methods

Pinyon conducted field work at the Site on July 1, 1999. The location of the drilling was on top of the mound of fill material approximately 400 feet north and 600 feet east of the entrance to 5350 Washington Street. The location was determined by CCoD personnel. Prior to drilling, a utility locate was performed so that underground utilities were not damaged during the drilling operation. During the drilling, CCoD personnel, the property owner and Site Services personnel were on Site to observe the drilling and sample collection. Site Services personnel were on Site on behalf of the property owner. One soil boring was drilled using a 4 1/4 inch hollow stem auger. Soil samples were collected from 12 to 18 feet continuously using a split spoon sampler. Samples were collected at two foot intervals from 12 to 18 feet. Following completion of drilling the hole was backfilled with the soil cuttings. The soil samples were placed on ice, in a cooler provided by Evergreen Analytical Laboratory, for holding and transport to the laboratory for analysis. Proper chain-of-custody procedures were followed. Bill Dunn and Carl Smits, Vice President, Quality Assurance, Evergreen Analytical Laboratory, Inc., were contacted to evaluate the proper analytical method for analysis of the soil sample. Fuel identification, EPA Method 8015 modified, and oil and grease, without silica gel cleanup, EPA Method 413.1, were used to analyze the soil sample.

Results

The first 12 feet of soil encountered was fill material from an off-site source and was not classified. From 12 to 18 feet soil and a "road base" material were encountered. PID readings ranged from 0 to 14 parts per million (ppm). The road base material collected at the 16 to 18 foot interval was split and given to Site Services personnel. The sample collected at 16 to 18 feet was taken to Bill Dunn, a former Oil Inspection Section (OIS) chemist, for evaluation. The results of the fuel identification indicate that no gasoline or Jet fuel/kerosene range hydrocarbons were detected. Diesel fuel (No.2) and motor oil were detected at concentrations of 770 and 1,800 milligram per kilogram (mg/Kg), respectively. The oil and grease analysis detected 71,000 mg/Kg in the soil sample.

Discussion

Based on a discussion with Bill Dunn, the analytical results verify that the material found at 12 to 18 feet is "road base." The analytical results are attached. The road base is a solid material and is composed of compounds that do not migrate easily in soil. The material is isolated, at a depth of 12 feet, and does not represent an exposure/contact risk. Based on the relatively low mobility and the thickness of the cover (12 feet), Pinyon recommends that the material be managed in place. Mr. Dunn concurs with this recommendation.

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If you have any questions or need any additional information, please feel free to contact me at your convenience.

Sincerely,

PINYON ENVIRONMENTAL ENGINEERING RESOURCES, INC.

Brian S. Angell

Engineer

Attachments: Figure 1, Laboratory Results

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